

What is claimed is:

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1. A pattern segmentation apparatus, comprising:
a feature amount extraction unit extracting a
feature amount of an image;
a feature amount setting unit setting a feature
amount of a category;
a feature amount comparison unit comparing the
feature amount of the category with the feature amount
of the image; and
a segmentation unit segmenting a portion
corresponding to the feature amount of the category
from the image.
 2. The apparatus according to claim 1, wherein
said feature amount comparison unit comprises a
correspondence generation unit generating
correspondence between the feature amount of the
category and the feature amount of the image, and
compares the feature amount of the category with the
feature amount of the image.
 3. The apparatus according to claim 2, wherein
said feature amount comparison unit comprises:
a difference level computation unit

~~comparing a difference level between the feature~~
 amount of the category and the feature amount of the
 image corresponding to the correspondence; and

an optimum correspondence extraction unit
 5 extracting optimum correspondence indicating a lowest
 difference level from the correspondence, wherein

said segmentation unit segments a portion
 indicating a difference level corresponding to the
 optimum correspondence equal to or lower than a
 10 predetermined value.

4. The apparatus according to claim 3, further
 comprising:

a combination unit generating a combination of
 15 segmentation areas by said segmentation unit such that
 each pattern segmented by said segmentation unit can
 correspond to any category to be recognized; and

a segmentation area determination unit
 determining a segmentation area of the image by
 20 prioritizing a combination indicating a smaller
 difference level accumulation value in the
 combinations.

5. ~~An pattern segmentation apparatus, comprising:~~

25 ~~a feature amount extraction unit extracting a~~

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~~feature amount of a character string image as a sequence of elements in a character string array direction;~~

5 a feature amount setting unit setting a feature amount of a category in a category array direction;

 a correspondence unit corresponding a last element in the sequence of the elements of the category with each element of the character string image;

10 a search unit searching for an element of the character string image corresponding to a first element of the sequence of the elements of the category by allowing an sequence of remaining elements of the category with the element of the character string image for correspondence of the last element
15 in the sequence of the elements of the category;

 a difference level computation unit computing a difference level between the character string image and the category corresponding to each other in the
20 sequence of the elements; and

 a discrimination unit discriminating a segmentation position of a character from the character string image based on the difference level.

25 6. The apparatus according to claim 5, wherein

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~~said difference level is obtained from an accumulation result of a distance between elements from the first element to the last element in the sequence of the elements of the category.~~

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7. The apparatus according to claim 6, wherein
said search unit makes correspondence of a current element in the correspondence of past elements based on the correspondence indicating the smallest accumulation value of the distance between elements.

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8. The apparatus according to claim 5, further comprising:

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an entry unit entering a set of an element of the character string image corresponding to the first element of the sequence of the elements of the category and a corresponding difference level for all elements in the character string image array direction;

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a search unit detecting a difference level indicating a value equal to or smaller than a predetermined value in difference levels specified by each element corresponding to the segmentation position of the character string image;

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an obtaining unit obtaining the element of the

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~~character string image corresponding to the difference~~
level retrieved by said search unit from said entry
unit; and

5 a computation unit computing a next segmentation
position of the character string image based on the
element of the character string image obtained from
said entry unit.

10 9. The apparatus according to claim 8, further
comprising:

15 a path generation unit generating a path
connecting the segmentation position of the character
string image with the next segmentation position of
the character string image computed by said
computation unit;

20 an attribute assignment unit assigning a
coordinate of the segmentation position, the
difference level retrieved by said search unit, and
the category corresponding to the difference level as
attributes of the path;

a combination generation unit generating a
combination of the paths by trading the character
string image through the path;

25 an evaluation unit evaluating the combination of
the paths based on an accumulation result of a

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~~difference level assigned to the path;~~

a selection unit selecting a combination of the paths based on the evaluation result; and

5 a section point determination unit determining a coordinate assigned to a path selected by said selection unit as a section point of the character string image.

10 10. The apparatus according to claim 9, further comprising

a recognition result output unit defining a category assigned to a path selected by said selection unit as a recognition result of a pattern sectioned at the section point.

15 11. A method of segmenting a pattern, comprising:
 setting a feature amount of a category;
 searching for an area corresponding to the feature amount of the category in an image; and
 20 segmenting an area obtained in the searching process from the image.

12. The method according to claim 11, wherein
 said feature amount of the category is compared
 25 with the entire feature amount of the image in a

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continuous DP method.

13. The method according to claim 11, wherein
said feature amount is peripheral features up to
5 an n-th ($n \geq 1$) peripheral feature.

14. The method according to claim 11, wherein:
every pattern segmented from the image are
associated with any of the categories to be
10 recognized;

a combination of a category to be recognized and
a corresponding pattern indicating a lowest total
difference level is selected;

15. A method of segmenting a pattern, comprising:
segmenting a first segmentation area
corresponding to a feature amount of a category from
an image; and

changing the first segmentation area when a
20 second segmentation area cannot be segmented
corresponding to a feature amount of a category from
remaining areas of the image.

16. A character segmenting method, comprising:
25 extracting a feature amount of a character string

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image as a sequence of elements in a character string array direction;

setting a feature amount of a category as a sequence of elements in a category array direction;

5 independently scanning a first element and a last element in a sequence of elements of the category against the sequence of the elements of the character string image;

obtaining correspondence between the sequence of the elements of the category and the sequence of the elements of the character string image;

computing a difference level between the character string image corresponding to the correspondence and the category; and

15 discriminating whether or not a pattern corresponding to the category exists in the character string image based on the difference level.

17. A pattern recognizing method, comprising:

20 setting a feature amount of a category;

searching for an area corresponding to the feature amount of the category in an image;

segmenting an area obtained in the searching process from the image; and

25 setting a category used in the segmenting process

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as a recognition result of an area segmented from the image.

18. A pattern recognizing method, comprising
5 setting a feature amount for segmenting a category;

 setting a feature amount for recognition of a category;

10 segmenting a pattern from an image based on the feature amount for segmentation; and

 recognizing a pattern segmented from the image based on the feature amount for recognition.

19. A computer-readable storage medium storing a
15 program for realizing:

 setting a feature amount of a category;

 searching a pattern corresponding to the feature amount of the category from an image; and

20 segmenting a pattern obtained in the searching process from the image.

20. A pattern segmentation apparatus, comprising:
 feature amount extraction means for extracting
a feature amount of an image;

25 feature amount setting means for setting a

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~~Feature amount of a category;~~

feature amount comparison means for comparing the feature amount of the category with the feature amount of the image; and

5 segmentation means for segmenting a portion corresponding to the feature amount of the category from the image.

21. An pattern segmentation apparatus, comprising:

10 feature amount extraction means for extracting a feature amount of a character string image as a sequence of elements in a character string array direction;

15 feature amount setting means for setting a feature amount of a category in a category array direction;

20 correspondence means for corresponding a last element in the sequence of the elements of the category with each element of the character string image;

25 search means for searching for an element of the character string image corresponding to a first element of the sequence of the elements of the category by allowing an sequence of remaining elements of the category with the element of the character

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string image for correspondence of the last element in the sequence of the elements of the category;

difference level computation means for computing a difference level between the character string image and the category corresponding to each other in the sequence of the elements; and

discrimination means for discriminating a segmentation position of a character from the character string image based on the difference level.

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